

## COLLOCATION SPACE IN RESURVEYED OFFICES

OFFICE CLLI	OFFICE ADDRESS	RESURVEY COMPLETED	CAGES AVAILABLE		CAGE AVAIL ABLE (DAYS)	APPLICATIONS AWARDED STARTING
			QUANTITY	SIZE		
BREACA12	245 S. Orange Ave, Brea 92621	4/1/98	1	S	120	6/05/98
CNCRCA01	1714 Colfax St, Concord 94520	3/20/98	1	8x8	120	6/05/98
DAVLCA12	590 San Ramon, Danville 94526	3/20/98	2	S	120	6/05/98
ELSGCA12	201 S. Douglas, El Segundo 90245	4/17/98	4	S	120	6/05/98
ELTRCA11	23011 El Toro Rd, El Toro 92630	4/1/98	4	S	120	6/05/98
GLDLCA11	124 S. Orange St., Glendale 91204	4/17/98	4	S	120	6/05/98
HYWRCA11	1880 Depot Ct, Hayward 94545	4/17/98	1	S	120	6/05/98
IRVNCA11	2350 Main St, Irvine 92714	3/30/98	3	5x10-ALL	120	6/05/98
MLPSCA11	76 Carlo St, Milpitas 95035	3/10/98	1	5x17	120	6/05/98
ORNGCA13	2525 N Org-Olive, Orange 92665	4/1/98	1	S	120	6/05/98
ORNGCA14	4245 W Chapman Ave Orange 92668	3/30/98	2	S	120	6/05/98
PLALCA02	345 Hamilton Ave., Palo Alto 94301	4/17/98	2	S	120	6/05/98
POWYCA11	14010 Midland Rd, Poway 92064	3/9/98	1	S	120	6/05/98
SNANCA01	507 N Bush St, Santa Ana 92701	4/1/98	2	S	120	6/05/98
SNFCCA12 / SNFCCA19	2345 Pine St. San Francisco 94115	4/8/98	3	S	120	6/05/98
SNJSKA12	6245 Dial Way, San Jose 95129	3/27/98	3	S	120	6/05/98
SNMTCA11	23 28th Ave, San Mateo 94403	4/10/98	3	S	120	6/05/98
SNTCCA01	1700 Space Park Dr, Santa Clara 95050	3/10/98	1	S	120	6/05/98
SNVACA01	234 Carroll St. Sunnyvale 94086	4/22/98	4	S	120	6/05/98
WLANCA01	2010 Century Park East, West Los Angeles 90067	4/17/98	5	S	120	6/05/98
ALMDCA11	2100 Central Ave, Alameda 94501	4/17/98	1	S	120	8/01/98
ANHMCA01	217 N Lemon St, Anaheim 92805	3/30/98	8	S	120	8/01/98
ANHMCA11	3502 W Orange Ave, Anaheim 92804	3/30/98	9	S	120	8/01/98
ARTNCA11	9129 Magnolia Ave, Arlington 92503	4/1/98	7	S	120	8/01/98
CNCRCA01	1714 Colfax St, Concord 94520 - NEW AREA	3/20/98	3	S	120	8/01/98
CORNCA11	511 S. Joy St, Corona 91720	4/1/98	6	S	120	8/01/98
FNTACA11	16816 Arrow Blvd, Fontana 92335	4/2/98	5	S	120	8/01/98
GRGVCA01	13062 Euclid, Garden Grove 92643	3/31/98	10	S	120	8/01/98
HGLDCA11	26840 E. Baseline, Highland 92346	4/1/98	3	S	120	8/01/98
IRVNCA01	4918 Irvine Ctr Dr, Irvine 92714	3/31/98	9	S	120	8/01/98
IRVNCA11	2350 Main St, Irvine 92714 - NEW AREA	3/30/98	4	S	120	8/01/98
MLPSCA11	76 Carlo St., Milpitas 95035 - NEW AREA	3/10/98	3	S	120	8/01/98

## COLLOCATION SPACE IN RESURVEYED OFFICES

OFFICE CLLI	OFFICE ADDRESS	RESURVEY COMPLETED	CAGES AVAILABLE		CAGE AVAIL ABLE (DAYS)	APPLICATIONS AWARDED STARTING
			QUANTITY	SIZE		
MTVWCA11	305 Hope St, Mountain View 94040	4/17/98	1	S	120	8/01/98
OKLDCA03	1587 Franklin St, Oakland 94612	3/24/98	5	S	120	8/01/98
PLALCA12	3350 Birch St, Palo Alto, 94306	3/27/98	4	S	120	8/01/98
PLCNCA11	1102 E Yorba Linda, Placentia 92670	4/2/98	2	S	120	8/01/98
SNANCA12	5117 W 1ST ST	4/1/98	2	S	120	8/01/98
SNFCCA14	1515 19th Ave, San Francisco 94122	4/16/98	5	S	120	8/01/98
SNJSCA21	2211 Junction Ave, San Jose 95131	3/27/98	1	S	120	8/01/98
SNRFCA01	220 Shaver St, San Rafael 94901	3/18/98	4	S	120	8/01/98
SNTCCA01	1700 Space Park Dr, Santa Clara 95050-NEW AREA	3/10/98	3	S	120	8/01/98
TUSTCA11	1971 Irvine Blvd, Tustin 92680	3/31/98	1	S	120	8/01/98
WNCKCA11	1755 Locust St, Walnut Creek 94596	2/23/98	1	S	120	8/01/98
YRLNCA11	19451 Yorba Linda Blvd, Yorba Linda 92686	4/2/98	3	S	120	8/01/98
ALBYCA11	1612 Solano Ave, Albany 94707	4/17/98	5	S	120	10/01/98
BNPKCA11	7701 Artesia Blvd, Buena Park 90621	4/2/98	8	S	120	10/01/98
COLACA01	359 Washington St, Colma 94014	3/24/98	6	S	120	10/01/98
FRMTCA11	36789 Fremont Blvd, Fremont 94536	4/17/98	6	S	120	10/01/98
FRMTCA12	4073 Adams St, Fremont 94538	4/17/98	4	S	120	10/01/98
HYWRCA01	1129 B St Hayward 94541	4/4/98	5	S	120	10/01/98
SNANCA11	3220 S, Briston St Santa Ana 92704	3/31/98	5	S	120	10/01/98
SNCRCA11	537 Laurel St, San Carlos 94070	3/24/98	4	S	120	10/01/98
SNRMCA11	9768 Broodmoor Dr, San Ramon 94583	3/18/98	5	S	120	10/01/98



**COLLOCATION RESURVEYED  
AND PACIFIC BELL DEPLOYMENT  
NORTHERN AND SOUTHERN CALIFORNIA**

<b>CENTRAL OFFICE</b>	<b>DATE DENIED</b>	<b>DATE RESURVEYED</b>	<b>DATE FOR REAPPLICATION</b>	<b>PB DEPLOYMENT OF ADSL</b>
ALBYCA11 Albany	11/5/97	4/17/98	10/01/98	YES
CNCRCA01 Concord	10/16/97	3/20/98	8/01/98	YES
COLACA01 Colma	11/17/97	3/24/98	10/01/98	YES
DAVLCA12 Danville	12/9/97	3/20/98	6/05/98	YES(2)
FRMTCA12 Fremont	11/5/97	4/17/98	10/01/98	YES(2)
HRCLCA01 Hercules	11/6/97	N/A	N/A	NO
HYWDCA01 Hayward	11/5/97	4/04/98	10/01/98	YES
HYWDCA11 Hayward	12/9/97	4/17/98	6/05/98	YES
MLPSCA11 Milpitas	10/15/97	3/10/98	8/01/98	YES
MNPKCA11 Menlo Park	11/5/97	N/A	N/A	NO

CENTRAL OFFICE	DATE DENIED	DATE RESURVEYED	DATE FOR REAPPLICATION	PB DEPLOYMENT OF ADSL
PLTNCA13 Pleasanton	12/10/97	N/A	N/A	YES
SNCRCA11 San Carlos	Missing documents	3/24/98	8/01/98	YES
SNFCCA14 San Francisco	10/24/97	4/16/98	8/01/98	YES(5)
SNRFCA01 San Rafael	11/14/97	3/18/98	8/01/98	NO
SNRMCA11 San Ramon	11/5/97	3/18/98	10/01/98	YES
SNSJCA21 San Jose	Missing documents	3/27/98	7/15/98	YES(5)
UNCYCA11 Union City	11/5/97	N/A	N/A	NO
VLLJCA01 Vallejo	5/10/97	N/A	N/A	NO
WNCKCA11 Walnut Creek	Missing documents	2/23/98	5/01/98	YES
ANHMCA11 Anaheim	12/22/97	3/30/98	7/01/98	YES(2)
ARTNCA11 Arlington	12/29/97	4/01/98	7/15/98	NO
BREACA11 Brea	2/9/98	4/01/98	7/15/98	NO
BREACA12 Brea	1/10/98	4/01/98	7/15/98	NO

CENTRAL OFFICE	DATE DENIED	DATE RESURVEYED	DATE FOR REAPPLICATION	PB DEPLOYMENT OF ADSL
BNPKCA11 Buena Park	3/31/98	4/02/98	7/15/98	NO
CLBSCA11 Calabasas	1/10/98	3/20/98	7/15/98	NO
CORNCA11 Corona	1/10/98	4/01/98	7/15/98	NO
ELTRCA11 El Toro	12/29/97	4/01/98	6/05/98	YES
FNTACA11 Fontana	12/29/97	4/02/98	7/15/98	NO
GLDLCA11 Glendale	3/24/98	4/17/98	6/05/98	YES
IRVNCA01 Irvine	2/13/98	3/31/98	7/01/98	YES
IRVNCA11 Irvine	12/29/97	3/20/98	6/05/98	YES
LACRCA11 Montrose	1/10/98	3/31/98	NO SPACE	YES
MRPKCA12 Moorpark	1/10/98	3/20/98	NO SPACE	NO
NORGCA11 Northridge	3/31/98	3/30/98	NO SPACE	YES
ORNGCA13 Orange	3/31/98	4/01/98	7/01/98	NO
ORNGCA14 Orange	12/29/97	3/20/98	6/05/98	NO
PLCLCA11 Placentia	3/31/98	4/02/98	7/01/98	NO

CENTRAL OFFICE	DATE DENIED	DATE RESURVEYED	DATE FOR REAPPLICATION	DATE FOR REAPPLICATION
PLDLCA01 Palmdale	12/29/97	3/30/98	NO SPACE	NO
PRMTCA01 Paramount	1/10/98	3/31/98	NO SPACE	NO
PRMTCA02 Paramount	2/09/98	3/31/98	NO SPACE	NO
RSMGCA11 Rancho Santa Margarita	5/19/98	N/A	N/A	NO
RVSDCA01 Riverside	12/24/97	3/30/98	NO SPACE	NO
SNANCA01 Santa Ana	2/18/98	4/01/98	7/01/98	YES(2)
SNANCA11 Santa Ana	12/29/97	3/31/98	7/15/98	YES(2)
SNCLCA12 San Clemente	2/10/98	3/30/98	NO SPACE	NO
SJCPCA12 San Juan Capistrano	2/10/98	3/17/98	NO SPACE	NO
TUSTCA11 Tustin	1/27/98	3/31/98	7/15/98	YES
YRLNCA11 Yorba Linda	3/31/98	4/02/98	7/15/98	YES
YRLNCA12 Yorba Linda	4/23/98	3/31/98	NO SPACE	YES
WLANCA01 West LA	4/06/98	4/17/98	6/05/98	YES(5)



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9

10 UNITED STATES DISTRICT COURT  
11 NORTHERN DISTRICT OF CALIFORNIA  
12 SAN FRANCISCO DIVISION

13  
14 COVAD COMMUNICATIONS  
COMPANY, a California corporation,  
15  
16 Plaintiff,

17 v.

18 PACIFIC BELL, a California corporation,  
19 Defendant.  
20

No. C98-1887-SI

**DECLARATION OF JOHN RUGO IN  
SUPPORT OF PLAINTIFF'S MOTION  
FOR PRELIMINARY INJUNCTION**

**Date: August 14, 1998**

**Time: 9 a.m.**

**Place: Courtroom 4**

**Honorable Susan Illston**

21  
22 I, John Rugo, declare as follows:

23 1. I am presently employed by Covad Communications, Inc. ("Covad") as  
24 Vice President of Operations. I submit this declaration in support of Covad's Motion for  
25 Preliminary Injunction. I have personal knowledge of the facts stated in this declaration, except  
26 those matters stated on information and belief and, if called, could and would testify competently  
27 to them.

28 Declaration of John Rugo in Support of  
Plaintiff's Motion for Preliminary Injunction (C98-1887-SI)



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**Spectral Interference**

2. Covad is a competitive local exchange carrier ("CLEC") which provides Digital Subscriber Line ("DSL") services. Covad has been providing its DSL services to the public since December 8, 1997. One type of DSL service that Covad offers uses CAP ADSL technology ("Carrierless Amplitude Phase Modulation, ADSL").

3. Sometime during the week of April 13, 1998 Pacific unilaterally and arbitrarily informed Covad that Pacific Bell was implementing a policy that appears to effectively ban the current version of CAP ADSL and require CLEC providers to implement one particular version of DMT ADSL ("Discrete Multitone Modulation") that Pacific Bell is currently testing. US West, another ILEC, also uses CAP ADSL technology, and permits Covad to use it. Pacific's purported reason for this requirement is that it will reduce the risk of "spectral interference," the phenomenon of electrical noise in one line interfering with signals in adjoining lines. A true and correct copy of the April letter received by Covad is attached as Exhibit A. The letter is mistakenly dated July 7, 1998.

4. The timing of Pacific Bell's policy is particularly disturbing. Covad deployed its first CAP ADSL equipment in a Pacific Bell central office ("CO") in September 1997, and began providing service using the equipment in December. Since then, Covad has continued to deploy CAP ADSL equipment throughout numerous Pacific Bell COs in the San Francisco Bay Area, with no complaints about spectral interference. Yet although the document outlining Pacific Bell's policy, "ADSL Based Service Network Interface Specification," is dated February, 1998, and was mentioned in Pacific Bell's April 13, 1998 letter, Pacific Bell never provided the Specification to Covad until around June 3, 1998, after Covad officially requested it

1 in hearings before the California Public Utilities Commission. This specification requires all  
2 CLECs to comply and warns in bold print that "**there will be no exceptions.**" A true and correct  
3 copy of the ADSL Based Service Network Interface Specification document received by Covad  
4 is attached as Exhibit B.  
5

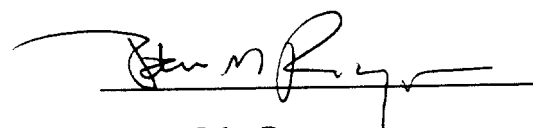
#### 6 Loop Failures and Delays

7 5. Pacific has also subjected Covad to unnecessary policies limiting Covad's  
8 ability to order the elements it needs to provide its DSL service. Further, Covad's ability to  
9 provide service has been frustrated by Pacific's unreasonable delays in providing those elements.

10 6. Pacific Bell has routinely failed to timely deliver and properly install  
11 unbundled local loops, the telephone lines which connect end-user premises to Covad's  
12 equipment collocated in Pacific Bell's COs. Pacific Bell's failure rate in delivering timely,  
13 workable loops is terrible: from December 8, 1997 to present, nearly 60% of all loops Pacific  
14 Bell has delivered to Covad have been either late, or improperly installed.

15 7. These failures cause our customers and their end users to become  
16 frustrated with Covad service. Even after Pacific Bell informs us that a working local loop has  
17 been installed, Covad's field tests reveal that Pacific Bell is often wrong. Consequently, Covad  
18 has been forced to change its operating procedures at great expense, so that we can now test local  
19 loops before we even attempt to install customer premises equipment at a residence.  
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1 I declare under penalty of perjury under the laws of the United States of America  
2 and the State of California that the foregoing is true and correct. Executed this \_\_ day of June,  
3 1998, at Santa Clara, California.

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6 John Rugo

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**PACIFIC BELL.**  
A Pacific Telesis Company

July 7, 1998

John Rugo  
3560 Bassett  
Santa Clara, Ca. 95054

*Rec'd by  
John Rugo  
during the  
week of  
April 13,  
1998*

Dear John

SBC (Nevada Bell, Pacific Bell and Southwestern Bell) are conducting trials in San Francisco, California and Austin, Texas of ADSL (Asymmetric Digital Subscriber Line) technology. During these trials CLECs wishing to participate can do so if their signed Interconnection agreement has contract language that supports the purchase of a 2-Wire Digital ISDN/xDSL capable loop. In order to ensure the stability of all services in our network, we have identified spectral requirements for ADSL signals and interconnection parameters as referenced in ADSL Technical Publication 76730 issued 2/98. To ensure reliability of other services in our network the spectral requirements must be adhered to.

Attachment 1 provides the SBC Spectral Requirements that must be met when deploying ADSL technology using the Unbundled 2-Wire Digital ISDN/xDSL capable loop in Pacific Bell's network. The parameters of the 2-Wire Digital ISDN/xDSL capable loops must be adhered to in order to avoid degrading the service of not only your end users, but the end users of other CLECs and Pacific Bell. This is consistent with language in our Interconnection Agreement which states that "Link Service may not be used to provide any service that would degrade or otherwise adversely affect Pacific's network services, (e.g., introduce harmful voltages or electrical currents in excess of standards used in common industry practice)".

Our Interconnection Agreement also requires us both to cooperate in implementing engineering guidelines, as they are developed, that will prevent degradation or adverse effects to each other's network services. Now that these industry standards have been developed for xDSL services, SBC believes that it is incumbent upon us to work cooperatively together to ensure the reliability and integrity of the network we will be sharing. An important part of our ability to accomplish this requires that we be able to identify specific circuits where ADSL signaling is planned to be or is now deployed. The loop qualification process being deployed will be the same process that Pacific Bell uses for its own circuits as well as those circuits being provisioned to CLECs.

We would like to meet and discuss how we can mutually benefit from cooperative effort to implement Spectral Management of the network. Please give me a call on 415-545-6196 to set up a meeting with all pertinent personnel in attendance.

We look forward to working with you on this matter.

*Todd M. Wolf*

Todd M. Wolf  
CPAT Account Manager  
370 3rd St., Rm. 716  
San Francisco, CA. 94107

Attachment (1)

## **Spectral Requirements for ADSL in SBC's Unbundled Loops**

### **ATTACHMENT 1**

Twisted pairs used for digital subscriber loop services typically are housed within binder groups with other pairs for at least part of their run length. Within a binder group, electromagnetic coupling, termed crosswalk, will result in the signal from one pair generating noise onto other pairs. This crosswalk interference can often be a limiting factor in service performance. In order to ensure proper service performance, the spectral usage of services must be carefully managed.

In this context, SBC has chosen an ADSL solution that adheres to the American National Standards Institute (ANSI) T1.413 standard using the frequency division multiplexed (FDM) option. In particular, the letter ballot for Issue 2 of T1.413 (T1 LB 652) will be referenced. Selection of a T1.413-based solution leverages the significant body of work that had been performed on spectral compatibility during the evolution of this standard. The FDM option was selected in order to minimize the effect of near-end crosswalk (NEXT). When various transceivers are located very close to each other and share the same binder, the crosswalk generated by a transceiver will see very little attenuation before being applied to other transceivers. This can occur at either the network or subscriber end, and is quite likely at the network end. Thus it is preferable to minimize the spectral overlap of signals for various services. By using the FDM option, NEXT from the ADSL downstream will have little overlap with the ADSL upstream and ISDN, and have only partial overlap with HDSL.

For ADSL deployed in unbundled loops, the same issues relative to crosstalk apply. Therefore it is crucial that ADSL systems deployed in unbundled loops have spectral characteristics similar to a T1.413-compliant system using the FDM option. The spectral characteristics of an ADSL system are shown in Figures 1 and 2. In each, the spectrum is broken into three sections: the out-of-band response below the pass band (A, D), the pass band response (B, E), and the out-of-band response above the pass band (C, F). The T1.413 standard gives the spectral requirements for a system using the echo-cancelled option. This information can be used to define the characteristics of sections A, B, E, and F of figures 1 and 2. Additional requirements must be given for sections C and D.

Consider the upstream response in Figure 1. Sections A and B are defined in Figure 29 of T1 LB 652, along with sections 7.14.1 and 7.14.2. These parts of the letter ballot are repeated in Appendix A for reference. For the case of section C, however, SBC does not feel that the response in Figure 29 of appendix A is restrictive enough, and the resulting NEXT could unnecessarily degrade downstream performance. For the case of 10 interferers, the NEXT generated by HDSL and ISDN will reach the noise floor of -140 dBm/Hz at about 400 kHz (crosstalk models taken from appendix B of T1 LB 652). For the response of Figure 29, this value would not be reached until about 650 kHz. SBC requires that the band from 138 kHz to 416 kHz roll off at 32 dB/octave such that the NEXT due to the upstream ADSL signal shall reach the noise floor at 416 kHz. The requirements above 416 kHz follow a similar pattern to Figure 29, but with 915 kHz changed to 620 kHz. The overall requirements are given in Figure 3.

Next consider the downstream response of Figure 2. Sections E and F are defined in Figure 25 of T1 LB 652, along with sections 6.14.1 and 6.14.3. These parts of the standard are repeated in Appendix B for reference. Since Figure 25 of T1.413 assumes the echo-cancelled option, it cannot be used to define section D of Figure 2. Echo cancelled systems can severely disrupt the service of customers on non-echo cancelled systems. SBC has determined that the degradation due to NEXT from the downstream ADSL signal is acceptable if it follows a 36 dB/octave roll off from 160 kHz down to 80 kHz. Below 80 kHz, a roll off of approximately 4.6 dB/octave is used to ensure that the level is 92.5 dBm at 4 kHz (a straight line fit in dB). The overall requirements are given in Figure 4.



PSD

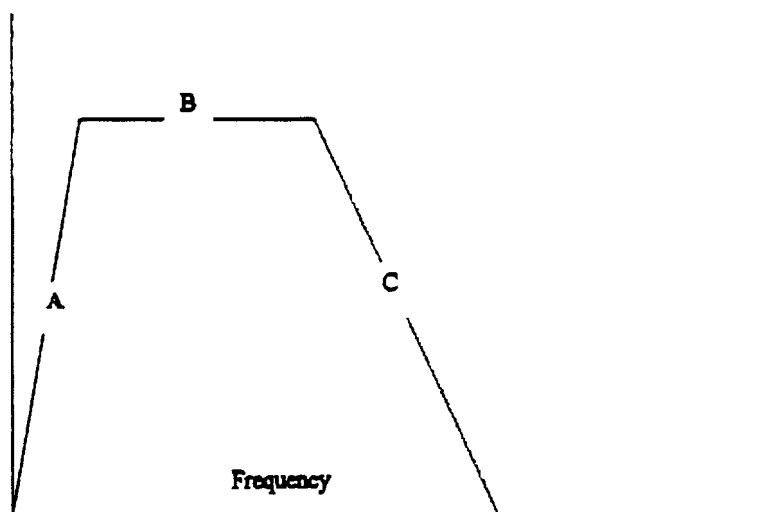


Figure 1: Upstream spectrum

PSD

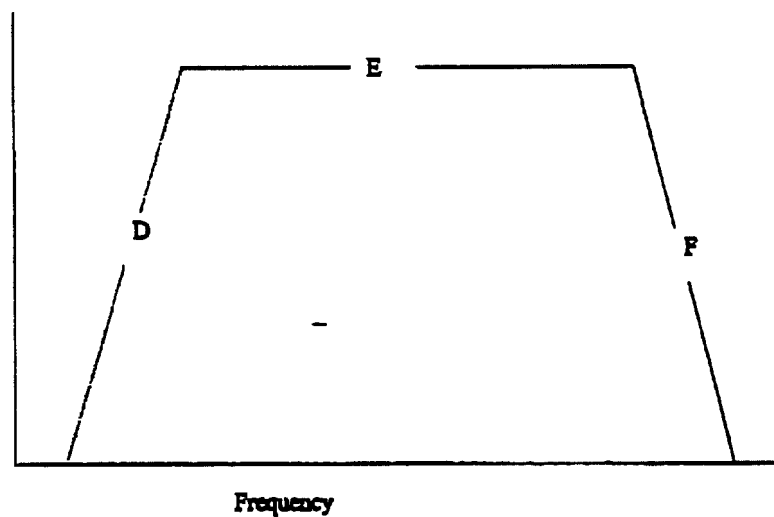


Figure 2: Downstream spectrum

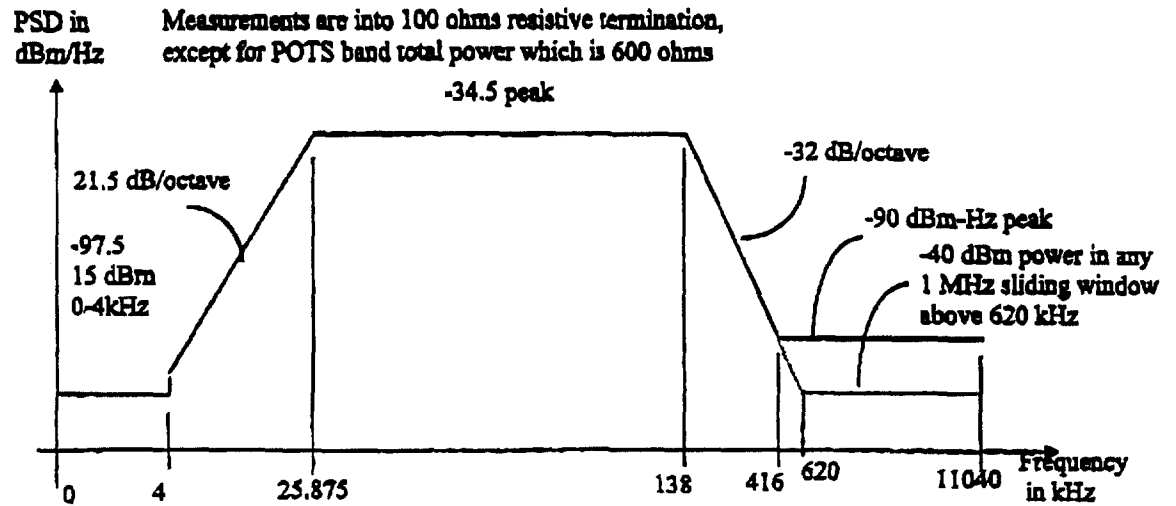


Figure 3: Upstream requirements

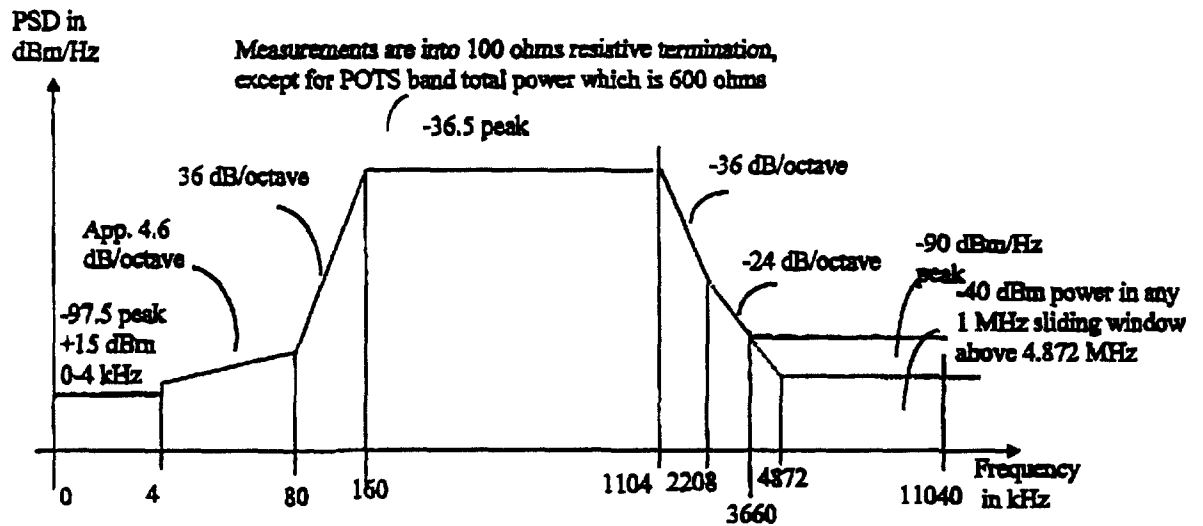
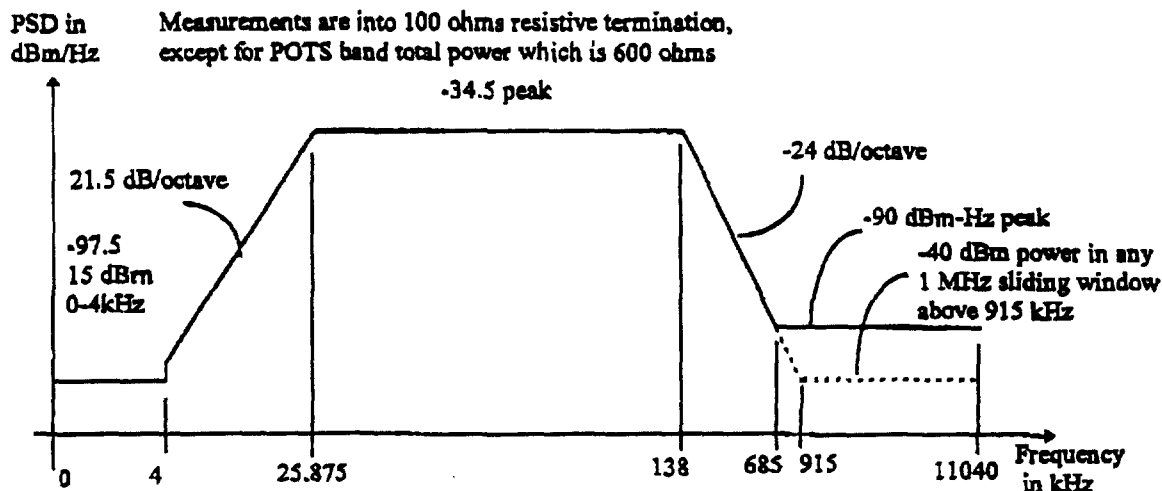


Figure 4: Downstream requirements

## Appendix A: Upstream Spectral Response from T1 LB 652

### 7.14 Transmitter spectral response



FREQUENCY BAND, kHz	EQUATION FOR LINE, dBm/Hertz
0 - 4	-97.5, +15 dBm 0-4 kHz
>4 - 25.875	$-92.5 + 21.5 \cdot \log(f/4)/\log(2)$
25.875 - 138	-34.5
138 - 685	$-34.5 - 24 \cdot \log(f/138)/\log(2)$
685 - 11040	-90, , with -40 dBm power in any 1 MHz sliding window above 915 kHz

Figure 29 – ATU-R transmitter PSD mask

Figure 29 shows a PSD mask for the transmitted signal. For purposes of this specification, the pass band is defined as the frequency range over which the modem transmits. The low frequency stop band is defined as the voice band.

#### 7.14.1 Pass band PSD and response

The average PSD within the used passband shall be no greater than -38 dBm/Hz; the upper end of this passband depends on whether the signal is for initialization (see 7.15.1) or steady state (see 7.15.3).

The pass band ripple shall be no greater than +3.5 dB; the maximum PSD of -34.5 dBm/Hz applies across the whole band from 25 kHz to 138 kHz; the minimum applies only over the used passband.

The group delay variation over the pass band shall not exceed 50μs.

#### **7.14.2 Low frequency stop band rejection**

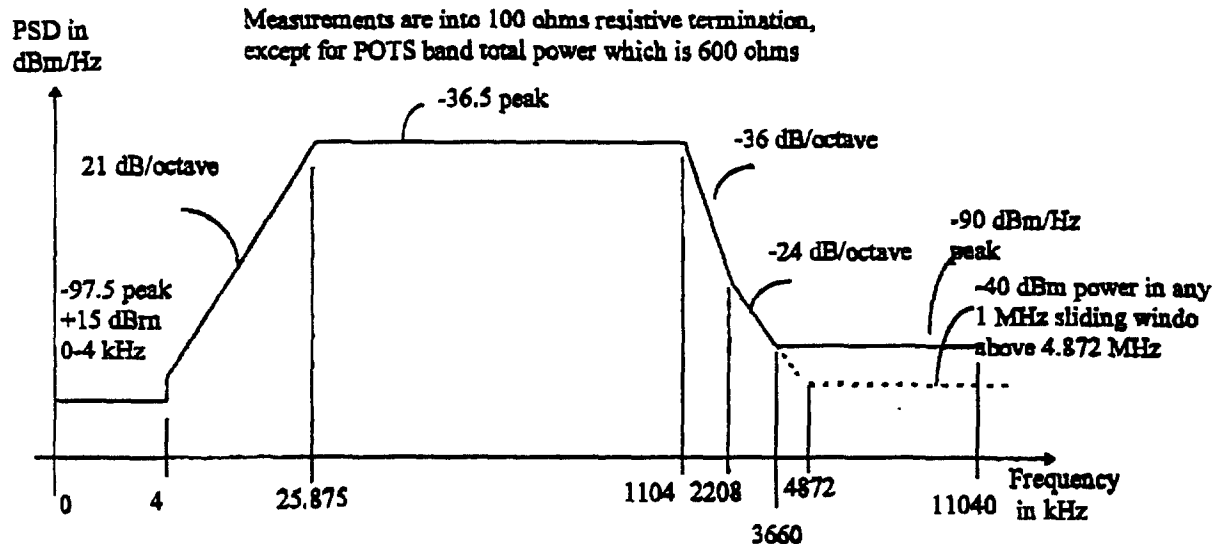
The total power in the voice band ( 0 Hz to 4 kHz) shall not exceed +15 dBm (see 12.4 for the method of measurement).

In the transition band from 4 kHz to 25.875 kHz, the maximum PSD is given by a straight line on a log scale from -92.5 dBm/Hz, at just above 4 kHz, to -34.5 dBm/Hz at 25.875 kHz; that is  $-92.5 + 21.5 \times \log(f/4)/\log(2)$  dBm/Hz.

## Appendix B: Downstream Spectral Response from T1 LB 652

### 6.14 Transmitter spectral response

Figure 25 shows a representative spectral response mask for the transmitted signal. The low frequency stop band is defined as the POTS band; the high frequency stop band is defined as frequencies greater than 1.104 MHz.



FREQUENCY BAND, kHz	EQUATION FOR LINE, dBm/Hz
0 - 4	-97.5, +15 dBm 0-4 kHz
>4 - 25.875	$-92.5 + 21 \times \log(f/4)/\log(2)$
25.875 - 1104	-36.5
1104 - 2208	$-36.5 - 36 \times \log(f/1104)/\log(2)$
2208 - 3660	$-72.5 - 24 \times \log(f/2208)/\log(2)$
3660 - 11040	< -90 peak, ith < -40 dBm power in any 1 MHz sliding window above 4.872 MHz

Figure 25 - ATU-C transmitter PSD mask

#### 6.14.1 Passband PSD and response

The average PSD within the used passband shall be no greater than -40 dBm/Hz reduced by power cut-back in multiples of 2 dB; the lower end of this passband depends on whether echo canceling or FDD is used, and is manufacturer discretionary; the upper end depends on whether the signal is for initialization (see 6.15.1) or steady state (see 6.15.3);.

The pass band ripple shall be no greater than +3.5 dB; the maximum PSD of  $(-40 - 2n + 3.5)$  dBm/Hz applies across the whole band from 25 kHz to 1104 kHz; the minimum applies only over the used passband.

The group delay variation over the pass band shall not exceed 50 $\mu$ s.

#### **6.14.3 High frequency stop band rejection**

The PSD shall decrease at 36 dB/octave from  $(-40 \text{ dBm/Hz} + 3.5 \text{ dB})$  at the band-edge (1.104 MHz) to  $(-76 \text{ dBm/Hz} + 3.5 \text{ dB})$  at 2.208 MHz, and at 24 dB/octave from 2.208 MHz until reaching a floor of -90 dBm/Hz at 3.660 MHz. In addition, the power in any 1 MHz sliding window from 4.872 MHz to 11.04 MHz shall not exceed -40 dBm.





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